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REPORT OF THE AD HOC REVIEW MEETING ON BAUXITE

Held at the Palais des Nations, Geneva
from 13 to 17 May 1991

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INTRODUCTION

1. In accordance with paragraph 77 of the Final Act of UNCTAD VII, the Secretary-General of UNCTAD convened the Ad Hoc Review Meeting on Bauxite from 13 to 17 May 1991. In the course of its session, the Review Meeting held four plenary meetings and a number of informal meetings. This report gives a brief account of the proceedings of the plenary meetings.

Chapter I

DISCUSSION OF ISSUES FOR IMPROVED PRODUCER-CONSUMER COOPERATION

(Agenda item 3)

and

FOLLOW-UP ACTION

(Agenda item 4)

2. For its consideration of agenda item 3, the Ad Hoc Review Meeting on Bauxite had before it the following documents prepared by the UNCTAD secretariat:

"Recent market and industry developments" - report by the UNCTAD secretariat (TD/B/C.1/RM/BAUXITE/2)

"Bauxite, alumina and aluminium statistics 1969-1989" - prepared by the UNCTAD secretariat (TD/B/C.1/RM/BAUXITE/3).

3. In addition, the UNCTAD secretariat circulated a number of technical papers submitted by individual contributors. These documents were issued under the symbols TD/B/C.1/RM/BAUXITE/Misc.1-8. (For details, see annex III below).

4. In his opening statement, the Deputy to the Secretary-General of UNCTAD and Director of the Commodities Division recalled that the Secretary-General of UNCTAD had convened the Ad Hoc Review Meeting pursuant to paragraph 77 of the Final Act of UNCTAD VII, in accordance with the results of comprehensive consultations with producing and consuming countries. This was the first meeting to be convened under this mandate, which referred to commodities not covered by international commodity agreements or arrangements.

5. He considered that developments in the bauxite/alumina/aluminium industry during the 1980s underscored the desirability of an exchange of views at the intergovernmental level with industry participation. The industry had gone through a restructuring process and the distribution of production capacity geographically and among corporate entities had changed at all stages of production. Production capacity at the smelter stage had been closed down in countries with high energy costs, while new investments had gravitated towards countries with access to low-cost sources of energy. The degree of corporate concentration and of vertical integration had diminished, although they were still high compared with those of many other mineral and metal industries. Developments in the market had become less predictable and interaction between producers and consumers had become closer. Prices for aluminium had become more volatile, and the trend towards linking alumina, and to some extent bauxite, prices to movements in the aluminium price had also led to increased instability in prices at the earlier stages of production.

6. In conclusion, he welcomed the decision by Governments to open a dialogue and expressed the hope that the strong focus of the agenda on substantive issues would stimulate a constructive exchange of ideas and increase mutual understanding among Governments and between Governments and industry.

7. The representative of the International Bauxite Association (IBA) introduced a paper by the IBA secretariat entitled "Dialogue with consumers: issues for discussion by bauxite producing and consuming countries" (subsequently circulated as TD/B/C.1/RM/BAUXITE/5). He stated that the basic objective of the IBA was to conduct a fruitful discussion with consumers on a continuing basis. The IBA saw two benefits of establishing a forum for dialogue between producers and consumers of bauxite. The first benefit was the potential to secure financial resources from the Common Fund for Commodities for the funding of projects in producer countries and regions. The second benefit was the flow of information and the direct contacts between officials of producing and consuming countries. He pointed out that, on the cost side, the budgetary requirements would depend on the particular type of forum adopted by the participants. At the level of a committee within UNCTAD these costs were negligible. At the other extreme were the possible costs of a body such as a study group (an international commodity body if access to the Common Fund was contemplated) with its own secretariat.

8. Describing the issues that IBA believed should be addressed in such a forum, he noted that they corresponded to the sub-items of agenda item 3 of the Review Meeting, with the exception that IBA added aluminium consumption and health as one issue.

9. With regard to exchange of information, he said that, taking account of the wealth of statistical data which existed, heavy emphasis should not be placed on data collection per se, but rather on exchanging information on current and future developments in the bauxite/alumina/aluminium industry. A major focus should be on current and projected mine/refinery/smelter capacity increases and reductions in order to minimize the prospect of supply and demand imbalances.

10. Concerning market transparency, discussion should focus on the current and future supply/demand balances and the relationship between the bauxite/alumina/aluminium markets. The factors affecting the price of aluminium on the London Metal Exchange (LME) should be addressed, as should the significance of various market developments including recycling, tariffs and other restrictions on the international trade in bauxite, alumina and aluminium. Discussion should also focus on developments in the markets for critical inputs such as caustic soda, energy, carbon and shipping.

11. With regard to promotion of consumption, it was proposed that studies be undertaken of end-uses and possible fields for expansion of consumption and production in the industry, including non-metallurgical end-uses of bauxite and alumina. Information should be exchanged to identify ways and means by which production and consumption could be expanded, including identification of sources of finance for the funding of market studies in producing countries.

12. As for exchange of information on new and available technologies, this issue should include discussion of ways and means to ensure that information about existing and new technologies in the bauxite/alumina/aluminium industry was disseminated.

13. Concerning research and development, there was considerable overlap between the general issue of research and development and the issue of the environment. Research and development efforts continued not only in the obvious area of cost reduction in the fields of bauxite, alumina and aluminium, but also in areas such as pollution control, reafforestation and land reclamation. Discussion on the issues of research and development and the environment in the productive stages of aluminium smelting, alumina refining and bauxite mining should take this situation into account. He made detailed suggestions concerning the areas on which the discussions could focus.

14. Regarding human resources development, this issue should include discussion of ways and means to improve the capabilities of the human resources engaged in the bauxite/alumina/aluminium industry. Specifically, consideration could be given to implementing, under the sponsorship of the United Nations with the possible assistance of IBA, training seminars and workshops dealing with economic, financial, legal and technical matters relating to the bauxite, alumina, aluminium industry. In addition, discussion should focus on the collection and dissemination of information, including funding, institutions, and programmes for manpower training.

15. Finally, with regard to aluminium consumption and health, he said that this issue involved monitoring, reviewing and disseminating information among producers and consumers on matters concerning aluminium consumption and health. In this regard, the broadest definition of aluminium consumption was used; aluminium consumption included cases such as the use of aluminium compounds in the purification of water and as a fire retardant.

16. The representative of Hungary said that it was necessary to ensure a full exchange of information and market transparency. This goal could not be achieved without the participation of East European countries and the USSR. The USSR in particular was a huge importer of alumina and a major exporter of aluminium. It was essential to take account of this in assessing the future outlook for the industry.

17. The representative of the Union of Soviet Socialist Republics said that his country was actively involved in the work of various commodity study groups. Data pertaining to these commodities might not have been submitted by his country in the past, but from 1989 onwards an effort had been made to provide such data. He fully supported action aiming to improve the exchange of information and said that in the event that the USSR industry was a member of any international organization, the supplying of statistical data on bauxite, alumina and aluminium would be considered.

18. The representative of France observed that any group to be established would have to follow closely and take into account the differences in the nature of development in various groups of countries. Whereas in developing countries, the problems concerned how to achieve gradual improvement of economic conditions, in Eastern Europe it was a question of complex restructuring of the mining and smelting industry.

19. The representative of the United States of America observed that IBA member countries had not made clear their preferences as regards the institutional solution to be adopted for a forum for dialogue. He expressed support for improvements in market transparency but he also stated his opposition to any form of commodity agreement for bauxite, alumina and aluminium. With regard to the issues described by the representative of IBA, he expressed interest in several proposals put forward for discussion but said that his country would be opposed to any form of production control following from the identification of supply/demand imbalances. He felt that matters concerning tariffs and restrictions on trade should be discussed within the General Agreement on Tariffs and Trade rather than in UNCTAD and that activities under the heading of research and development should not result in mandated transfer of technology.

20. The representative of India said that the discussions in the informal working group had been most useful and had underlined the need to continue the dialogue, as well as the need for a forum for the exchange of information. He suggested that a preparatory meeting be convened to consider institutional mechanisms. While his country would prefer to see a committee established within UNCTAD, its position at this stage was a flexible one. He added that producing countries had not expressed a clear preference for any institutional option since they believed it would be inappropriate for them to do so without hearing the views of consumers.

21. The representative of Mexico said that his country considered that discussions between producers and consumers were very important, and that he was prepared to analyse all possible means of cooperation.

22. In response to a question, the representative of the UNCTAD secretariat said that it could be assumed that a committee within UNCTAD would be considered eligible as an international commodity body by the Common Fund for Commodities, since the UNCTAD Committee on Tungsten had recently been designated as eligible. Consequently, a committee within UNCTAD should be able to act as sponsor for projects receiving funds from the Second Account of the Common Fund.

23. The representative of Canada said that preliminary canvassing of the industry in her country had not indicated a strong belief in the need for improved exchange of information. She expressed, however, a preparedness to refer to the industry the views expressed during the Meeting and to explore further their interest in a regular dialogue between producers and consumers.

24. The representative of the International Bauxite Association, responding to concerns expressed by the representative of the United States of America, said that IBA member countries did not contemplate production controls in any form.

25. The representative of Suriname endorsed the suggestions made by the representative of IBA and emphasized the pressing need for closer cooperation, in particular in view of the increasing globalization of the economy and the need to deal with environmental issues on a global basis.

26. The representative of the European Economic Community said that the Community had already underlined the importance and utility of establishing a dialogue and a regular exchange of information between producing and consuming countries. In order to launch this dialogue, the Community had therefore associated itself with the proposal to undertake an in-depth examination of the principal characteristics of the bauxite market as well as of the markets for alumina and aluminium. The Community considered that variations in the main parameters such as the balance of supply and demand, the relationship between costs and prices and the development of consumption could be examined together, with a view to foreseeing effects. It had to be recognized that excessive and unpredictable instability of the market affected both producers and consumers, in particular developing producing countries that were highly dependent on export income from this industry.

27. The establishment of a regular dialogue between producers and consumers would improve market transparency and provide a better basis for decisions regarding the exploitation of new mineral deposits or for the planning of additions to production capacity. The usefulness of such a dialogue depended on a wide participation by producers and consumers and on assuring a role for industrial advisers whose experience constituted an indispensable contribution to a constructive dialogue.

28. As regards the institutional form of the dialogue, the Community proposed that this would be one of the main elements to be considered by a further ad hoc review meeting on bauxite which should be convened as soon as possible by the UNCTAD secretariat, taking into account the need to ensure a wider participation. This new meeting should consider the proposals presented by the IBA without, however, excluding other options. The Community considered that the productiveness of the dialogue would depend on the efforts of all delegations to ensure the participation of all interested parties.

29. The representative of Japan said that, although the results of the Review Meeting might affect the views of his Government, for the moment his authorities were not convinced of the need for a new forum on bauxite. They were, however, prepared to explore all possibilities and to give due consideration to the proposal by the IBA.

30. The representative of Sweden, associating his delegation with the statement made by the representative of the European Economic Community, stated that it was regrettable that the meeting had not attracted a broader participation. His delegation was flexible as regards follow-up action, and would welcome an improved dialogue, in particular on items such as recycling and the environment.

31. The representative of the United States of America said that it was unfortunate that so few had heard the presentations made by invited speakers, many of which had been excellent. Given the low degree of participation, it would be difficult for his delegation to justify attending further ad hoc review meetings. Against this background, he questioned the need to establish a new forum. If any new meetings were held, his country's participation would be decided on a case-by-case basis, after consultation with the industry.

32. The United States representative submitted a review of the market situation for bauxite, alumina and aluminium in his country. Virtually all of the production from the three bauxite mines in the United States was for non-metallurgical products. Imports of bauxite for consumption were about 13.5 million metric tons, of which 88 per cent was for metallurgical purposes. The four operating alumina refineries in the United States and a fifth refinery which had been reactivated in the United States Virgin Islands consumed approximately 11.8 million metric dry tons of bauxite, and together represented 5.4 million tons of annual alumina capacity. An additional 4.1 million metric tons of alumina was imported to meet the demand of the 23 smelters operating in the United States.

33. The recent decline in the United States economy had resulted in decreased shipments by the United States aluminium industry by 2.8 per cent to about 7 million metric tons in 1990 compared with 1989 despite a 6.7 per cent increase in the exports of aluminum ingot and mill products. Shipments to all the major end-use sectors except containers and packaging had declined. A strong demand for ingot, especially for export, had resulted in United States smelters producing just over 4 million metric tons of aluminum in 1990 - almost a 100 per cent capacity utilization rate. Exports of aluminum ingot had increased by 15.4 per cent during the period, exports of mill products had decreased 3.7 per cent and imports had increased 7.4 per cent.

34. The National Defense Stockpile maintained inventories of abrasive grade, metal grade, and refractory grade bauxite, as well as aluminium. Stocks of these materials had remained unchanged in 1990. However, a contract had been awarded to upgrade metal-grade bauxite in inventory to aluminium metal.

35. Regarding the outlook for 1991, total domestic aluminium shipments for the first two months of 1991 had decreased 7 per cent in relation to 1990 levels, but it was expected that the economy would revive in the second half of 1991 and that aluminium shipments for the year would remain flat in line with 1990 levels.

36. Finally, United States aluminium shipments were expected to increase at a compound annual rate of 2 to 3 per cent until 1995, but with 1992 substantially exceeding this rate. Shipments of aluminium to the container and packaging sector would remain the largest end-use for aluminium, and should continue to be a strong growth sector. The transporation sector should gain increasing importance as automobile producers incorporated increasing amounts of aluminium into their vehicles. The United States aluminium industry was also attempting to develop new products. All the major integrated aluminium producers were now casting ingots of aluminium-lithium alloys, which offered greater stiffness and lighter weight than conventional alloys.

37. The representative of Norway stated that her country took a positive attitude to continuing the dialogue along the lines described by the representative of the European Economic Community, provided it was developed on the basis of a broad membership, and that it had a particular interest in market transparency and the environment.

38. The representative of the Union of Soviet Socialist Republics welcomed the opportunity for dialogue and said that his country would be prepared to join in this effort as described by the representative of the European Economic Community. However, if this dialogue were to involve financial outlays, that issue would have to be considered separately.

Action by the Ad Hoc Review Meeting on Bauxite

39. At its 4th (closing) meeting, on 17 May 1991, the Review Meeting adopted a draft decision on follow-up action (agenda item 4) submitted by the Chairman (TD/B/C.1/RM/BAUXITE/L.2), having first taken note of an oral amendment to the draft. (For the decision, as adopted, see annex I).

40. At the same meeting, the Review Meeting decided to annex to the report on its session the Chairman's summary of discussions in the informal working group on agenda item 3 (see annex II).

Chapter II

ORGANIZATIONAL MATTERS

(a) Opening of the Meeting

41. The Ad Hoc Review Meeting on Bauxite was opened on 13 May 1991 by the Deputy to the Secretary-General of UNCTAD and Director of the Commodities Division, who made an introductory statement (cf. paras. 4-6 above).

(b) Election of officers

(Agenda item 1)

42. At its 1st meeting, on 13 May 1991, the Review Meeting elected the following officers to serve on its Bureau:

Chairman: Mr. Harold POLLACK (Suriname)

Vice-Chairman-cum-Rapporteur: Mr. Henri NOLARD (Belgium).

(c) Adoption of the agenda and organization of work

(Agenda item 2)

43. At the same meeting, the Review Meeting adopted the provisional agenda for its session as set out in section I of TD/B/C.1/RM/BAUXITE/1. The agenda therefore read as follows:

1. Election of officers
2. Adoption of the agenda and organization of work
3. Discussion of issues for improved producer-consumer cooperation:
   - (a) Exchange of information
   - (b) Market transparency
   - (c) Promotion of consumption
   - (d) Exchange of information on new and available technologies
   - (e) Research and development
   - (f) Human resources development
   - (g) Environment
   - (h) Any other issues
4. Follow-up action
5. Other business
6. Adoption of the report of the Ad Hoc Review Meeting.

44. With regard to the organization of work, the Review Meeting agreed to take up agenda item 3 in an informal working group, to allow for a free-ranging discussion of the issues and a direct exchange of views with participants who had been invited to make presentations.

(d) Attendance 1/

45. The following States members of UNCTAD were represented at the Review Meeting: Australia; Austria; Belgium; Brazil; Bulgaria; Cameroon; Canada; France; Ghana; Germany; Greece; Hungary; India; Indonesia; Ireland; Italy; Jamaica; Japan; Madagascar; Mexico; Morocco; Netherlands; Norway; Philippines; Republic of Korea; Spain; Sweden; Suriname; Thailand; Turkey; Union of Soviet Socialist Republics; United Kingdom of Great Britain and Northern Ireland; United States of America; Yugoslavia. The European Economic Community was also represented.

46. The following specialized and related agencies were represented at the Meeting: International Labour Organisation; International Monetary Fund. The General Agreement on Tariffs and Trade was also represented.

47. The following intergovernmental organizations were represented at the Meeting: Economic Community of West African States; International Bauxite Association; Organisation for Economic Co-operation and Development.

48. The following non-governmental organization, specially invited by the UNCTAD secretariat, was represented at the Meeting: International Primary Aluminium Institute.

(e) Adoption of the report of the Ad Hoc Review Meeting

(Agenda item 6)

49. At its 4th (closing) meeting, on 17 May 1991, the Review Meeting adopted the draft report on its session (TD/B/C.1/RM/BAUXITE/L.1), with minor amendments, and authorized the Rapporteur to complete the final report of the Meeting as appropriate.

Note

1/ For the list of participants, see TD/B/C.1/RM/BAUXITE/INF.1.

ANNEXES

Annex I

FOLLOW-UP ACTION

Decision adopted by the Ad Hoc Review Meeting on Bauxite

The Ad Hoc Review Meeting on Bauxite,

Decides to recommend that the Secretary-General of UNCTAD convene a second Ad Hoc Review Meeting on Bauxite, as soon as possible after UNCTAD VIII, taking into account the need to ensure the widest possible participation of producing and consuming countries, including participation by industry advisers;

Agrees on the following provisional agenda for the second Ad Hoc Review Meeting:

1. Election of officers

2. Adoption of the agenda and organization of work

3. Review of the current market situation and outlook

4. Discussion and examination of the need and of the level of support for a producer-consumer forum on bauxite/alumina/aluminium

5. Examination of the financial, legal and practical implications of the different institutional options

6. Other business

7. Adoption of the report of the Ad Hoc Review Meeting.

4th (closing) Meeting
17 May 1991

Annex II

CHAIRMAN'S SUMMARY OF DISCUSSIONS IN THE INFORMAL WORKING GROUP ON AGENDA ITEM 3: DISCUSSION OF ISSUES FOR IMPROVED PRODUCER-CONSUMER CO-OPERATION*

1. On most of the sub-items under agenda item 3, presentations were made by invited speakers. In the following, these presentations and the discussions on the subjects raised are summarized according to the order of the sub-items in the agenda.

(a) Exchange of information

2. The representative of the UNCTAD secretariat introduced the secretariat report entitled "Recent market and industry developments" (TD/B/C.1/RM/BAUXITE/2). He noted that the bauxite/alumina/aluminium industry had gone through a period of structural transformation brought on by changes in both demand and supply. The rate of growth in primary aluminium demand had fallen compared to earlier periods as a result of lower global economic growth, a lower, although still positive, growth in intensity of use, reduced working inventories and increased recycling. On the supply side, increases in energy costs had led to closures of smelters, particularly in North America and Japan. Corporate strategies had changed, with some of the major companies diversifying in order to reduce their exposure to price risks at the earlier production stages. Several Governments had become major participants in the industry.

3. As a result of the restructuring, the degree of concentration at all stages of the industry had fallen, although it remained high. Price volatility had increased at all stages. Regarding the market outlook, he noted that aluminium prices were at a very low level. Inventories had increased significantly, mainly as a result of continued strong production coupled with weak demand in key markets. For the rest of 1991, the development of prices was likely to depend on the length and depth of the recession in some major industrialized countries. Growth in demand was likely to be small, while additions to smelting capacity would be low but significant. Most analysts appeared to agree, however, that 1992 and, more particularly, 1993 would see stronger demand.

4. Dr. Alfred Francis, Director of Economics and Technical Information of the International Bauxite Association (IBA), presented a paper analysing the current situation of the bauxite/alumina/aluminium industry and short-term market outlook, as seen by the secretariat of the IBA (TD/B/C.1/RM/BAUXITE/Misc.5). In a brief overview of international

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* Annexed to the report by decision of the Ad Hoc Review Meeting on Bauxite at its closing meeting, on 17 May 1991 (cf. para. 40 above).

macroeconomic developments, he expressed the view that the current economic downturn was primarily of a cyclical nature and signs of economic recovery were likely to appear by the second half of 1991.

5. Turning to the state of the primary aluminium market, he said that, owing to the supply/demand imbalance, the market had softened during the second half of 1990 and prices had declined. As a result of a recessionary environment in the United States and the United Kingdom and economic/political uncertainties surrounding the Gulf crisis, demand had been lower than expected. The end of the Gulf war had not improved aluminium prices, which had remained low at 70-71 cents per pound. Because of additions to world smelting capacity, prices were not expected to improve much during 1991. Referring to the current cost/price ratio, he said that it was not very favourable and costs in some major producing countries could go up in the near future because of the strict enforcement of environmental regulations. Under the current market prices, many smelters were barely covering their operating and capital costs. However, if the economic situation improved, 1992 should be a better year for the industry.

6. Regarding the alumina market he observed that the market had started to weaken by the second half of 1990 owing to over-supply and increasing stocks. The spot price had declined to around $US 190-200/tonne in the first quarter of 1991 and was likely to remain at these levels for the rest of 1991. With a predicted pick-up in demand, some improvement was expected in 1992.

7. Turning to the market for traded bauxite, he noted that it was currently in better shape than that for alumina. However, owing to further increases in production in several producing countries, the bauxite market could begin to show some signs of weakness by the end of 1991.

8. He concluded that the general consensus in the industry was one of a bearish outlook for the rest of 1991 and part of 1992. Substantial improvements were expected as from 1993.

9. In response to a question, Dr. Francis observed that major differences existed between production costs in different bauxite mines. The differences were mainly the result of different characteristics of deposits and of variations in taxation.

10. Mr. E. Eliasco, expert adviser to the European Economic Community, presented a paper on the recycling of aluminium (TD/B/C.1/RM/BAUXITE/Misc.6). He observed that recycled metal had to be competitive with primary aluminium and that the recycling industry had to respect regulations concerning the environment. The main factors determining the competitiveness of recycling were: firstly, the purchase price of scrap, which was affected by the scrap's metal content and composition and by the collection method; secondly, the recycling cost, which was often low in comparison to the contained metal but which grew

with the complexity of the scrap; and thirdly, the sales price of the recycled metal, which was often independent of that of primary metal.

11. Taking the situation in France as an example, he went on to describe how the recycling rate could be raised. Whereas almost all new scrap was recovered and used, about 145,000 tons or 43 per cent of the theoretically available 340,000 tons of old scrap in France were recycled each year. This proportion should be raised to over 50 per cent by the year 2000, mainly by raising the recycling rate of aluminium used in packaging, where only 0 to 20 per cent of the theoretically available scrap was recycled, as compared to 70 to 80 per cent of that used in transportation or construction.

12. Responding to questions, Mr. Eliasco noted that the Basle Convention on Transboundary Movements of Hazardous Wastes had created problems for metal recycling industries by complicating the movement of scrap across borders. He hoped it would prove possible to establish distinctions in the application of the Convention between scrap with a positive economic value and waste. In response to another question, he stated that recycled aluminium should not be seen as a threat to primary aluminium, since the recyclability of the metal was a necessary condition for competitiveness.

(b) Market transparency

13. Mr. Martin Abbott, Director of Marketing of the London Metal Exchange, presented a paper entitled "An introduction to the London Metal Exchange". He said that the LME had three primary functions: price discovery and reference price, hedging, and physical delivery. He described the process by which prices were established at the LME and how this process provided the reference price for the industry. Hedging and the provision of a reference price were inextricably linked. Once a price became accepted as the basis for contracts, it was natural that the contracting partners would want to hedge. The hedging increased the liquidity of the futures contract, which in turn reinforced the credibility of the reference price. He gave an illustrative example of how a hedging operation was carried out. He then went on to describe how physical delivery of metal related to the other functions of the LME, stating that 90 to 95 per cent of transactions were concluded without any metal changing hands. LME warrants were issued against metal of an approved brand that had been put in an LME warehouse. These warrants were bearer documents, with each one giving title to a specific parcel of metal in a specific warehouse. A warrant might change hands many times before it was "cashed in". Since delivery of warrants was at the seller's option, a buyer could not predict what brand he would receive or where it would be stored. Consequently, there was a disadvantage in taking delivery on the LME rather than from a regular market physical source, and a producer undertaking to deliver a specific quality at a specific location and date would expect a premium. That premium had to be foregone when delivering directly to the LME. It followed that the LME was used for physical delivery only as a last resort. Thus, the LME stocks, acting as stocks of last resort, provided a

sensitive indicator of the state of the metals business, changing at times of market stress, but remaining unobtrusive during times of market balance.

14. In response to questions, Mr. Abbott said that 85 to 90 per cent of the business on the LME was estimated to be trade-related. Since the liquidity of the market was limited, major funds stayed out of it. An additional unattractive feature from the point of view of speculators was that profits could not be taken until the contract fell due. Responding to another question, he stated that the LME had a monitoring system that allowed it to identify quickly activities aiming at a squeeze of the market. Should such activities be discovered, the LME had the possibility to suspend trading and dissolve positions forcibly. With regard to secondary aluminium, a contract for this product could be introduced on the LME as early as the beginning of 1992.

15. The paper by Mr. Dennis Morrison of the Jamaica Bauxite Institute on market transparency in the international aluminium industry - the view-point of a bauxite and alumina exporting country (TD/B/C.1/RM/BAUXITE/Misc.8) was introduced in Mr. Morrison's absence by a representative of the UNCTAD secretariat. The paper noted that market transparency required a situation where many buyers and sellers exist and where prices, quantities, etc., in transactions between these buyers and sellers were known. The degree of market transparency was determined by the ownership structure, the method of price formation and the production structure. In addition, the homogeneity of the particular commodity was of importance.

16. The paper described the historical development of ownership and production structures. While the degree of concentration of ownership had fallen, it was still highly concentrated in comparison with other metals. Prices, which earlier had been determined by the major producers, had become more transparent at the aluminium stage as a result of the emergence of commodity exchange trading. As regards alumina, a key aspect of the market was the high degree of confidentiality surrounding contract prices. However, the volume of alumina transactions at market-related prices had increased steadily. Linking of bauxite prices to aluminium prices and the evolution of standard grades and the use of premiums and discounts had resulted in an increased degree of transparency for this product as well. The advantage of increased market transparency for bauxite and alumina-producing countries was mainly that this facilitated the assessment of export prices for the purposes of taxation. Another potential advantage lay in the role of market prices as indicators of evolving capacity imbalances. The volatility of terminal markets did, however, create problems in the form of fluctuations in revenues. It was vital that bauxite and alumina-exporting countries develop measures to cope with these negative effects. Two measures that could be considered were the creation of stabilization funds, in which earnings above a base level would be deposited to be used in lean years, and increased use of hedging facilities.

17. Mr. James Reeve of the International Primary Aluminium Institute (IPAI) introduced a paper by Mr. Alan Payne on the IPAI Statistical System (TD/B/C.1/RM/BAUXITE/Misc.1). He said that the value of the methodology of the system lay in the fact that it provided hard and accurate data which came direct from IPAI Statistical Correspondents. The data was based on precise definitions in respect of the statistics supplied and also of the geographical areas covered. These data were reported promptly to the Confidential Statistical Officer, aggregated into different geographical areas and published on established dates. For example, primary aluminium production figures were published within three weeks of the month to which they related; inventory figures were published some six weeks after the date to which they related. The data in each IPAI statistical series were not made available to anyone before the exact time they were published (11 a.m. London time on the day of publication), when they became publicly available.

18. IPAI did not in any way interpret the statistics it published. The reasons why, for example, production in a given geographical area in one month was substantially less than in the preceding month might sometimes be well known. At other times, the reason might not be known. In no circumstances, however, would IPAI comment or offer any sort of explanation for changes of this sort. The confidentiality of data supplied by individual companies was most strictly observed. The IPAI's role was simply to produce the hard data.

19. The data for each series within the IPAI Statistical System came exclusively from IPAI Members and Official Correspondents. The contributors must have ownership of, or a shareholding in, a company producing primary aluminium. Analysts must, of course, take this into account when deciding what additional information they might require from other sources to complete a total picture of the aluminium and alumina industry as a whole.

20. Mr. Alan Payne, Secretary-General of the IPAI, responding to a question, said that the inclusion of statistics on bauxite would considerably increase the amount of work required by the IPAI secretariat and raise policy questions which had yet to be considered. In response to another question, he said that IPAI had had contacts with the aluminium industry in East European countries and it was hoped that eventually statistics from this region would be included in the IPAI statistics.

(c) Promotion of consumption

21. Dr. Alfred Francis, Director of Economics and Technical Information of the International Bauxite Association (IBA) addressed the issue of promoting the use of aluminium products and developing aluminium fabricating facilities in developing countries and regions (cf. TD/B/C.1/RM/BAUXITE/Misc.4). He began by examining the trends in the aluminium industry over the past 20 years. Owing to reduced growth rates in aluminium consumption and significant increases in energy costs, the

share of traditional aluminium producers - namely Japan, the United States of America and Europe - had declined dramatically in favour of new producers with relatively cheap sources of energy, namely Australia, Brazil, Canada, Norway, Venezuela and certain Middle Eastern countries. While the growth rates of aluminium consumption had declined in the traditional markets, those in the newly industrialized economies and oil-rich developing countries had been quite impressive.

22. Turning to the main topic of his presentation, he outlined the steps taken by the IBA in collaboration with United Nations organizations (UNCTAD, UNIDO, UNDP, UNCTC) to promote aluminium consumption and to develop aluminium fabricating facilities in developing countries. A study on promotion of aluminium consumption in the West African region would be undertaken, comprising the examination of (i) the present and potential sizes of markets for aluminium products, (ii) barriers to market access and cultural, legal and administrative barriers and proposed measures to remove them, and (iii) technical and economic matters concerning the setting up and operation of fabricating facilities. Finally, he outlined the various possible actions considered by IBA to promote aluminium consumption and encourage downstream processing in the IBA's member countries.

23. A paper by Mr. James Ramsahoye, Bauxite Industry Development Corporation, Guyana, on gibbsitic bauxite - some non-metallic applications (TC/B/C.1/RM/BAUXITE/Misc.7), was introduced by a representative of the UNCTAD secretariat in Mr. Ramsahoye's absence. The paper explained that the part of bauxite production which was not subjected to chemical treatment to produce alumina through the Bayer process was instead calcined, that is heat treated, to produce calcined bauxite. This was used for refractory, abrasive and fused alumina industries. The main requirement for refractory calcined bauxite was that iron and silica contents be very low. For other non-metallurgical applications of bauxite, a low silica content was generally desirable.

24. Calcined bauxite was mainly used in the production of refractory, that is, heat-resistant products. These products were used in many industrial processes that required vessels that held hot, molten material, as in the metallurgical industry, for example. Refractories with an alumina content of over 85 per cent were known as extra-high alumina products. They were produced by subjecting good quality bauxite to a temperature of 1,550 to 1,600 degrees Celsius in a rotary kiln. When raw bauxite was calcined at a lower temperature, the resulting product had a lower density than the super calcined refractory bauxite. This product was fed to a fusion furnace to produce brown fused alumina, with ferro-silicon as a by-product. Brown fused alumina was used in grinding materials and also as a refractory.

25. Alumina produced through the common Bayer process could also be calcined in order to eliminate any sodium remaining from the process. This low-sodium alumina was used for refractories, for abrasives, as an additive to chinaware, as a catalyst, as a drying agent and in other applications. Tabular alumina was produced by recrystallizing calcined alumina so that

large crystals were formed. The resulting material had a very high density. It was used as a refractory material and as a filler for epoxy and polyester resins.

26. Aluminium sulphate, which was produced by treating bauxite with sulphuric acid, was used for water purification and in the paper industry. It was facing increasing competition from aluminium hydrate, which had the advantage of containing no iron. Aluminium hydrate was produced in the Bayer process and, besides being used in water purification, it had found application as a flame retardant in carpet backing, plastics etc. It was also used in the production of synthetic marble, in toothpaste, in paper, and in adhesives and sealants.

(d) Exchange of information on new and available technologies

27. Mr. Pierre Baillot of Aluminium Pechiney made a presentation on Pechiney and sales of technology. His remarks were confined to aluminium smelting, since this was the stage of the industry where completely new plants with wholly new technology were established. He stated that the objective of technological research and development was to lower the cost of construction of smelters and to lower the use of aluminium production in these smelters.

28. Production costs had decreased over the years as a result of increasing the size of the pots in which the electrolysis took place and increasing the amperage. As a consequence, investment costs per tonne of aluminium production capacity had been reduced dramatically. As regards the costs of operation, these had also decreased as a result of improvements in three areas: increased energy efficiency of the process, lowered energy consumption, and raised labour productivity.

29. Major improvements had also been made in the protection of the natural environment by reduced emissions and in workers' health and safety. The covering of pots to prevent fumes from escaping had been of major importance in this respect.

30. With regard to Pechiney's role as a supplier of technology, he emphasized the importance of local counterparts and underlined that four conditions had to be fulfilled for any new project to be viable. The availability of electrical energy had to be assured, the logistical situation, in particular as regards access to raw materials, had to be favourable, financing had to be assured, and, finally, the prospects for marketing the product had to be good.

31. Responding to questions, Mr. Baillot said that technological change in alumina refining tended to be more incremental than in aluminium smelting. Efficiency was generally raised through "de-bottlenecking". He believed that the Bayer process would remain the only economic method for alumina refining on an industrial scale. Regarding transfer of technology, he emphasized that this process was the same irrespective of whether the

recipient of technology was a Government or a private sector enterprise and whether it was located in a developed or a developing country.

(e) Research and development

32. There was no presentation by any invited speaker under this sub-item. It was observed, in the course of the discussion, that the non-ferrous metal industries, with the exception of the aluminium industry, had been relatively less successful than, for example, the chemical industry in developing new uses for its products. In general, the non-ferrous metal industries had concentrated their research and development efforts on finding ways of reducing costs, while the development of close collaboration with consumers had been relatively neglected. It was emphasized, however, that the aluminium industry was by and large an exception. Reference was also made to the need for research and development in the field of environmental protection, where improved ways of protecting the environment from harmful effects at all stages of production had to be developed and put into effect.

(f) Human resources development

33. The importance of improving the capabilities of personnel in all aspects of the industry was underlined. In developing countries in particular, large training needs existed. It was suggested that these needs be met through joint efforts by industry, Governments and the international community and that an effort be made to identify training opportunities and facilities.

34. The representative of the International Labour Office (ILO) made a statement on human resources development. He said that the ILO had four areas of action: (i) standard setting; (ii) technical co-operation; (iii) research; (iv) meetings. He added that social and labour issues affecting different industries were addressed through a series of tripartite meetings and that bauxite and aluminium industries were covered by meetings on non-coal mining and the metals trade. He noted that the conclusions of the meetings - unlike International Labour Standards (ILS) - were not legally binding and served as guidelines for new ILS or codes of practice, such as codes on safety and health in underground coal mines and in various open cast mines. Regarding the ILO's training programme, the objectives were to provide training at various levels for upgrading and adapting technical and managerial skills in line with changing labour market needs. He also described employers' and workers' activities within the ILO.

35. Referring to technical co-operation related to mining, he said that it was concentrated in the area of occupational safety and health, rescue and working conditions in underground mines in developing countries. He added that the ILO was under consideration for the management of a project to strengthen the institutional capabilities of a national ministry of mines and energy in the areas of manpower planning and improvement of manpower productivity in the mining and energy sector.

(g) Environment

36. Mr. Rolf Andersson, Managing Director of Svenska Returpack AB, presented a paper on recycling of aluminium cans in Sweden and its environmental and economic aspects (TD/B/C.1/RM/BAUXITE/Misc.3). He said that a recycling system for aluminium cans had been introduced in Sweden in 1984 and that the recycling rate had been raised from 60 per cent to 83 per cent over the last six years. A special company, Svenska Returpack AB, was operating the recycling system, which was based on mandatory deposits with profit allocated to environmental purposes. Legislation and support from the Government had been important factors in achieving the current high recycling rate. In accordance with a recently passed law, the return rate for aluminium beverage cans should reach 90 per cent by 1993, thus further reducing energy demand. Referring to environmental and economic aspects, he observed that on the whole the system had been a success. Moreover, the can share of the beer market had increased from 54 per cent in 1983 to 60 per cent in 1990. In conclusion, he said that the general trend in Sweden at present for brewery packing systems was towards refilling and recycling.

37. In response to a question, Mr. Andersson stated that differences in product standards legislation between countries might constitute an impediment to recycling of aluminium cans to the extent that they presented cross-border movement of cans.

38. Dr. Joszef Varga of the Hungarian Aluminium Corporation presented a paper on environmental protection and workers' health and safety in the Hungarian aluminium industry (TD/B/C.1/RM/BAUXITE/Misc.2). He observed that pollution of the environment did not respect frontiers, systems of property ownership, or types of political power and it was in the interest of mankind to protect the environment. Turning to the Hungarian aluminium industry, he said that bauxite and alumina production had reached 3 and 0.8 million tonnes per year respectively. The bauxite resources of the country were enough to maintain the aluminium industry for several decades. Therefore, consideration had to be given to all aspects of environmental pollution, health protection and the security of working conditions. The aluminium industry affected the environment in various ways. The most important were air, soil and water pollution. He also stressed the detrimental effects on people, plants and animals. Introducing the issue of "humanization", he said that working people were subject to physical, mental and environmental stresses at their work place. Therefore, the aim of humanization was the preservation of human working capability with the least possible damage to the organism. In this respect, his company had elaborated a method of measuring and evaluating the varying physiological parameters during work in the Hungarian bauxite industry. On the basis of the results of measured data, working procedures were organized to moderate the stress level of each worker and to determine fitness for work. In conclusion, he called for international cooperation to find solutions to interdependent problems of ecology, including humanization and economic development.

39. In response to a question, Dr. Varga stated that environmental standards for the bauxite/alumina/aluminium industry were set by Hungarian law. However, the industry was not able to comply with these standards, mainly because of the advanced age of the equipment used. In the case of bauxite mining, the standards as regards workers' safety and health were being reviewed, since the present standards were not scientifically based. Aluminium smelters currently operated under a temporary exemption from standards, which would expire in 1995. It was observed by one delegation that experience in Western Europe and other regions showed that measures to limit pollution also had a positive economic impact, since, inter alia, they necessitated recycling of inputs.

40. Mr. Payne, of the International Primary Aluminium Institute (IPAI), informed the Meeting about the current project undertaken by IPAI on the "Environmental impact of bauxite mining". He said that this worldwide survey would be without reference to any specific geographical area and should provide the factual basis for a report on the accomplishments of the industry, especially with regard to land regeneration. In this connection, he said that the survey would be undertaken without prejudice to the question of whether it was better to restore land to its original condition or to devote regeneration efforts to the creation of new and socially or economically desirable uses for mined-out land. In order to further the study, a Task Group had been set up to consider methodologies to be employed in data gathering and to draft a framework consisting of three phases of work. The first phase would examine the biophysical characteristics of individual mining operations and would cover such topics as flora, fauna, biological diversity, productivity and sustainability. It would also identify the extent of restoration programmes already in place, technologies being used and land use before and after mining. The second phase would attempt to survey corporate attitudes and philosophies, manuals of practice and codes of conduct in order to enumerate qualities of good rehabilitation practice with universal application. The objective of the third phase, to be completed in mid-1992, would be to provide the industry with a reference data base containing information about environmental issues affecting the industry worldwide, the programmes in place and successful land regeneration techniques.

41. In conclusion, he expressed satisfaction that mining operations, including those in developing countries, had recognized the importance of environmental considerations and were looking for ways of improving their programmes to mitigate the environmental impact of mining operations. The IPAI's bauxite mine survey was intended to help achieve this objective.

Annex III

CHECK-LIST OF MISCELLANEOUS DOCUMENTS SUBMITTED TO THE REVIEW MEETING

Symbol	Title
TD/B/C.1/RM/BAUXITE/Misc.1	"The IPAI statistical system", by Mr. Alan Payne, Secretary-General of the International Primary Aluminium Institute (in English only)
TD/B/C.1/RM/BAUXITE/Misc.2	"Environmental protection and workers' health and safety in the Hungarian aluminium industry", by Dr. Joszef Varga (in English only)
TD/B/C.1/RM/BAUXITE/Misc.3	"Recycling of aluminium cans: environmental and economic aspects", by Mr. Rolf Andersson (in English only)
TD/B/C.1/RM/BAUXITE/Misc.4	"Promoting the use of aluminium products and developing aluminium fabricating facilities in developing countries and regions", prepared by the International Bauxite Association Secretariat (in English only)
TD/B/C.1/RM/BAUXITE/Misc.5	"The current state of the bauxite/alumina/aluminium industry and short-term market outlook", prepared by International Bauxite Association Secretariat (in English only)
TD/B/C.1/RM/BAUXITE/Misc.6	"Le recyclage de l'aluminium", by Mr. E. Eliasco (in French only)
TD/B/C.1/RM/BAUXITE/Misc.7	"Gibbsitic bauxite - some non-metallic applications", by Mr. James W. Ramsahoye (in English only)
TD/B/C.1/RM/BAUXITE/Misc.8	"Market transparency in the international aluminium industry - the viewpoint of a bauxite and alumina exporting country", by Mr. Dennis Morrison (in English only)
TD/B/C.1/RM/BAUXITE/Misc.9	List of participants
TD/B/C.1/RM/BAUXITE/Misc.10	"Introduction to the London Metal Exchange", by Martin Abbott (in English only)